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Indian Standard

SPECIFICATION FOR PICKLED GOAT SKINS

(First Revision)

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 4

November 1987

Indian Standard

SPECIFICATION FOR PICKLED GOAT SKINS

(First Revision)

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(*Continued on page* 15)

Indian Standard

SPECIFICATION FOR PICKLED GOAT SKINS

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 27 March 1987, after the draft finalized by the Leather Sectional Committee had been approved by the Chemical Division Council.

0.2 Pickling operation of pelts bring about conditions unfavourable for putrefaction by introducing high salt concentration and high hydrogen concentration. This renders pickled pelts suitable for storage and transhipment. Further, pickled pelts are amenable for smooth and scientifically controlled tanning operation.

0.3 This standard was originally published in 1969 and was based on investigations on export consignments at the Central Leather Research Institute, Madras. In this revision, modifications have been brought about in the fungicidal treatment clause, sampling method and criteria for conformity have been clearly specified. Further, the appendix providing the test method to determine resistance to mould growth has been deleted and reference has been made to LB: 1 of IS : 6191-1971*.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements, and methods of sampling and test for goat skins, pickled with sulphuric acid and common salt, as is generally in vogue in present day manufacturing practice.

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*Methods of micro-biological, colour fastness and microscopical tests for leather.

†Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 1640-1960* shall apply.

3. REQUIREMENTS

3.1 Raw Material — The material shall be dry or wet-salted goat skin.

3.1.1 The sizes of the skins shall be as agreed to between the purchaser and the supplier.

3.2 Processing — The skins shall be pickled with sulphuric acid and common salt.

3.2.1 The skins shall be adequately treated with fungicide or combination of fungicides which are effective and which do not cause health hazard so as to inhibit mould growth or spore germination and swelling over a period of 48 hours when tested according to the method given in LB: 1 of IS : 6191-1971†.

3.3 Appearance — The pelt shall have clean flesh side and the grain shall be smooth, free from visible indication of swelling.

3.4 The material shall comply with the requirements given in Table 1.

4. PACKING AND MARKING

4.1 Packing — The pickled goat skins shall be packed in bags made from polyethylene film/sheets of thickness 0·03 to 0·04 mm after sprinkling powdered common salt within them.

4.2 Marking — Each packing shall be clearly marked with mass in kg; number of skins in each packing; recognized trade-mark, if any; and month and year of manufacture.

4.2.1 Each packing may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers, may be obtained from the Bureau of Indian Standards.

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*Glossary of terms relating to hides, skins and leathers.

†Methods of micro-biological, colour fastness and microscopical tests for leathers.

TABLE 1 REQUIREMENTS OF PICKLED GOAT SKINS

(*Clause* 3.4)

SL No.	CHARACTERISTIC	REQUIREMENT	METHOD OF TEST (REF TO CL No. IN APPENDIX A)
(1)	(2)	(3)	(4)
i)	Moisture content, percent by mass	As agreed to between the purchaser and the supplier	A-3
ii)	Acid content (as H_2SO_4), mass, *Min*	0·30	A-4
iii)	Salt content (as NaCl), percent by mass, *Min*	15	A-5
iv)	Soluble hide substance, percent by mass	As agreed to between the purchaser and the supplier	A-6
v)	Hide substance, percent by mass, *Min*	70	A-7
vi)	*p*H of aqueous extract, *Max*	3·0	A-8
vii)	Shrinkage temperature, *Min*	50°C	A-9

NOTE 1 — The requirements for various characteristics are given for those pickled pelts that are not stored for periods longer than three months under normal conditions.

NOTE 2 — Hydrolysis of hide substance takes place during transit owing to temperature and other conditions. It would, therefore, be necessary that soluble protein determination should be carried out on goods after reaching their destination. For three months storage under normal conditions, the soluble protein should not exceed one percent by mass.

5. SAMPLING AND CRITERIA FOR CONFORMITY

5.1 For the purpose of ascertaining the conformity of pickled skins in a consignment to this specification, the scale of sampling and criteria for conformity shall be as prescribed in Appendix B.

APPENDIX A

(*Table* 1)

TEST METHODS

A-1. QUALITY OF REAGENTS

A-1.1 Unless specified otherwise, pure chemicals and distilled water (*see* IS : 1070-1977*) shall be employed in tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

A-2. PREPARATION OF SAMPLE FOR TEST

A-2.1 The sample shall consist of six pieces, approximately 100 × 100 mm, cut from different pelts (thirds are suitable). The samples shall be cut from the butt area, free from gross fat and flesh, 50 mm above the tail and shall be securely sealed in polyethylene bags for despatch. For shrinkage temperature, other areas of pelt may be sampled and should be clearly marked.

A-2.2 Cut equal portions of the pelt pieces (size approximately 6 × 6 mm) to make a composite sample of approximately 50 g. Hand squeeze lightly the residue of pelt pieces to obtain at least 10 ml expressed liquor. Squeezed pieces may be used for physical tests and shrinkage temperature determination.

A-3. DETERMINATION OF MOISTURE CONTENT

A-3.1 Outline of the Method — A specified amount of pickled pelt is mixed with toluene and the moisture along with toluene is distilled off and collected in the receiver or trap. Toluene being lighter fraction separates out at the top and from the graduated scale, volume of moisture is determined. Finally the percentage of moisture is calculated by reckoning it back to the actual amount of pickled pelt taken for the determination.

A-3.2 Apparatus

A-3.2.1 *Assembly* — The assembly of the apparatus consists of a glass flask heated by suitable means and provided with a reflux condenser discharging into a trap and connected to the flask. The connections between the trap, condenser and flask should be of interchangeable

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*Specification for water for general laboratory use (*second revision*).

ground glass joints (*see* IS : 5165-1969*). The trap serves to collect and measure the condensed water, and to return the solvent to the flask. The assembly of the apparatus is shown in Fig. 1 and the various components are described in **A-3.2.1.1** to **A-3.2.1.4**.

A-3.2.1.1 *Flask* — A 500 ml flask of the shape shown in Fig. 1, made of hard alkali resistant glass, well annealed and as far as possible free from striae and similar defects.

A-3.2.1.2 *Condenser* — A water cooled glass reflux condenser having a jacket approximately 400 mm long and an inner tube of 9·5 to 12·7 mm outside diameter. The tip of the condenser to be inserted in the trap may be ground off at the angle of 30° from the vertical axis of the condenser. When inserted into the trap, the tip of the condenser shall be 6 to 7 mm above the surface of the liquid in the trap after distillation conditions have been established.

A-3.2.1.3 *Receiver* — Otherwise called the trap, made of hard alkali resistant glass, well annealed and as far as possible free from striae and similar defects, provided with ground glass joints, with the shape, dimensions and tolerances as given in Fig. 1; consisting essentially of the upper chamber, together with the tube and ground joint leading to the flask, and the graduated tube. The graduated portion shall have a capacity of 5 ml when filled to the highest graduation mark. The scale shall cover the range of 0 to 5 ml and shall be graduated at intervals of 0·1 ml. The graduation and marks corresponding to each millimetre shall be numbered and carried completely round the tube. The graduation marks midway between the numbered marks shall be carried three-quarters-way round the tube. The graduation marks capacity shall not exceed 0·05 ml.

A-3.2.1.4 *Heat source* — The source of heat may be either an oil bath or an electric heater provided with a sliding rheostat or other means of heat control. The temperature of the oil in the bath should not be much higher than the boiling point of toluene.

A-3.2.2 *Copper Wire* — Long enough to extend through the condenser, with one end twisted into a spiral. The diameter of the spiral should be such that it fits snugly within the graduated portion of the receiver and yet can be moved up and down.

A-3.3 Reagents

A-3.3.1 *Potassium Dichromate-Sulphuric Acid Cleaning Solution*

A-3.3.2 *Toluene* — Saturate the toluene by shaking with a small quantity of water and distil. Use the distillate for moisture determinations.

A-3.4 Procedure — Clean the entire apparatus with potassium dichromate-sulphuric acid cleaning solution to minimize the adherence of

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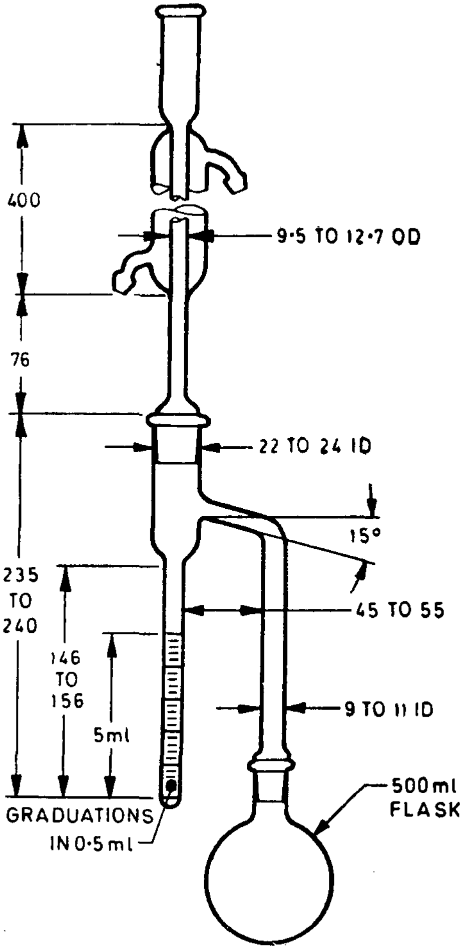
*Specification for interchangeable conical ground glass joints.



All dimensions in millimetres.

FIG. 1 MOISTURE DISTILLATION APPARATUS

water droplets to the sides of the condenser and the receiver. Rinse thoroughly with water and dry completely before using. The quantity of material taken for the test is determined by the amount of moisture present (*w*/*w*). Normally 7 to 8 g of the pickled pelt cut into squares of about 3 mm is used. Place the required quantity of material, accurately weighed, in the distillation flask and add an equal volume of toluene, as desired but never less than 100 ml and swirl to mix. Assemble the apparatus and fill the receiver with the solvent by pouring it through the condenser until it begins to overflow into the distillation flask. Insert a loose cotton plug in the top of the condenser to prevent condensation of atmospheric moisture within the tube. In order that the refluxing may be under control, wrap the flask and tube leading to the receiver with asbestos cloth. Heat the flask so that the distillation rate is about 100 drops per minute. When the greater part of the water has distilled over, increase the distillation rate to about 200 drops per minute and continue until no more water is collected. Purge the reflux condenser occasionally during the distillation with 5 ml portions of toluene to wash down any moisture adhering to the walls of the condenser. The water in the receiver may be made to separate from the toluene by moving the spiral copper wire up and down in the condenser and receiver occasionally, thus causing the water to settle at the bottom of the receiver. Reflux until the water level in the receiver remains unchanged for 30 minutes and then shut off the source of heat. Flush the condenser with toluene, as required, making use of the spiral copper wire to discharge any moisture droplets. Immerse the receiver in water at about 27°C for at least 15 minutes or until the toluene layer is clear, and then read the volume of water.

A-3.5 Calculation — Calculate the moisture content as follows:

$$\text{Moisture content, percent by mass} = 100 \times \frac{VD}{M}$$

where

V = volume in ml of water,

D = specific gravity of water at the temperature at which the volume of water is read, and

M = mass in g of the material taken for the test.

A-3.5.1 The estimate shall be done in duplicate and shall not differ by more than two percent.

A-4. DETERMINATION OF ACID CONTENT

A-4.1 Outline of the Method — A known quantity of pelt is shaken with sodium chloride solution and the extracted solution is titrated against standard alkali. The acid content is then calculated in terms of sulphuric acid on moisture-free basis of the material.

A-4.2 Reagents

A-4.2.1 *Bromophenol Blue Indicator Solution* — *See* IS : 2263-1979*.

A-4.2.2 *Sodium Chloride Solution* — *N*/10.

A-4.2.3 *Sodium Hydroxide Solution* — *N*/10.

A-4.3 Apparatus

A-4.3.1 *Mechanical Shaker*

A-4.3.2 *Stoppered Flask*

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*Methods of preparation of indicator solutions (*first revision*).

A-4.4 Procedure — Weigh 10 g of pelt cut to pieces and shake with 100 ml of sodium chloride solution in a stoppered flask for 2 hours. Filter, then titrate 50 ml of the filtrate with sodium hydroxide solution using bromophenol blue indicator solution.

A-4.5 Calculation — Calculate the acid content as follows:

Acid content, percent by mass $= 0{\cdot}98\ VN$

where

V = ml of $N/10$ sodium hydroxide solution used for the titration, and

N = normality of sodium hydroxide solution.

A-4.6 Results — Express the results in percent by mass on moisture-free basis.

A-5. DETERMINATION OF SALT CONTENT

A-5.1 Outline of the Method — A known quantity of the pickled pelt is shaken with sodium acetate solution for a known period. The resultant solution is then estimated for salt volumetrically against standard silver nitrate solution, using potassium chromate as indicator. The salt content is then estimated on moisture-free basis of the material.

A-5.2 Reagents

A-5.2.1 *Potassium Chromate Indicator Solution* — 5 percent (*w/v*).

A-5.2.2 *Standard Silver Nitrate Solution* — $N/10$.

A-5.2.3 *Sodium Acetate Solution* — $N/5$.

A-5.3 Apparatus

A-5.3.1 *Mechanical Shaker*

A-5.3.2 *Stoppered Flask*

A-5.4 Procedure — Weigh 10 g of pelt cut to pieces and shake with 200 ml of sodium acetate solution in a stoppered flask for 2 hours. Filter the solution through Whatman filter paper No. 4 or equivalent. Titrate 25 ml aliquot from the filtrate with standard silver nitrate solution using potassium chromate as internal indicator.

A-5.5 Calculation

A-5.5.1 Calculate the salt content (as NaCl) as follows:

Salt content (as NaCl),
percent by mass $= 0{\cdot}467\,6\ VN$

where

V = volume in ml of standard silver nitrate solution, and

N = normality of standard silver nitrate solution.

A-5.6 Results — Express the results in percent by mass on moisture-free basis of the material.

A-6. DETERMINATION OF SOLUBLE HIDE SUBSTANCE

A-6.1 Outline of the Method — A known quantity of the pelt is shaken with sodium bicarbonate solution for a known period. The extract is then filtered. From the solution ammonia is liberated by the addition of excess of caustic soda, distilled into an absorbent solution and estimated by titration. From this, percentage of hide substance dissolved is calculated.

A-6.2 Apparatus

A-6.2.1 *Distillation Apparatus*

A-6.2.2 *Kjeldahl Flask* — 700 ml capacity.

A-6.3 Reagents

A-6.3.1 *Concentrated Sulphuric Acid* — Relative density 1·84 (conforming to IS : 266-1977*).

A-6.3.2 *Sodium Bicarbonate* — approximately 0·1 *N*.

A-6.3.3 *Phenolphthalein Indicator* — Dissolve 1 g of phenolphthalein in 100 ml of ethyl alcohol (50 percent by volume).

A-6.3.4 *Sodium Hydroxide Solution* — 35 percent (*w/v*).

A-6.3.5 *Saturated Solution of Borate-Free Boric Acid* — Containing a suitable indicator, like 2 ml of a mixed indicator solution of 0·06 percent methyl red and 0·04 percent methylene blue in 96 percent ethyl alcohol in one litre.

A-6.3.6 *Standard Sulphuric Acid or Hydrochloric Acid*—approximately 0·5 *N*.

A-6.4 Procedure — Weigh 10 g of the pelt cut in pieces and extract with 500 ml of sodium bicarbonate solution for 24 hours with intermittent shaking in a flask. Filter, concentrate the filtrate to about 25 ml and transfer to a Kjeldahl flask. Digest the contents with sulphuric acid after adding copper sulphate and potassium sulphate. Pour excess of sodium hydroxide solution (approximately 70 ml) carefully down the side of the flask. Connect the flask with a vertical condenser by means of a tube bent twice preferably including a spray trap. Distil the ammonia with water vapour into a receiver of 300 to 400 ml capacity containing 100 ml of saturated boric acid and indicator solution. Dip the cooling tube into the boric acid. The distilled ammonia colours the indicator green. Distil until there is 150 to 200 ml of distillate. Before ending the distillation, lower the receiver so that the cooling tube no longer dips in. Distil for further 3 minutes, rinse the end of the

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*Specification for sulphuric acid (*second revision*).

condenser with distilled water. Titrate the ammonia with standard sulphuric acid or hydrochloric acid to *p*H 4·6. When using the indicator, titrate to the first constant pale pink colour (*see* **A-6.3.3**).

NOTE — The end point of the titration is approximately *p*H 4·6. Potentiometric or other indicator system known to give an accurate colour change at *p*H 4·6 may also be used.

A-6.5 Calculation — Calculate the soluble hide substance as follows:

Soluble hide substance, percent by mass = $1{\cdot}573\,6\ VN$

where

V = volume in ml of standard acid, and
N = normality of standard acid used.

A-6.6 Results — Express the results in percent on moisture-free basis of the material.

A-7. DETERMINATION OF HIDE SUBSTANCE

A-7.1 Procedure — Determine the hide substance in the material on moisture-free basis in accordance with the method given in LC: 5 of IS : 582-1970*.

A-7.2 Results — Express the results in percent by mass on moisture-free basis of the material.

A-8. DETERMINATION OF *p*H

A-8.1 Outline of the Method — A known quantity of the pelt cut to pieces is shaken with a known quantity of sodium chloride solution for a known period and the *p*H of the decanted extract is determined electrometrically.

A-8.2 Apparatus

A-8.2.1 *Mechanical Shaker*

A-8.2.2 *p*H *Meter* — Mains or battery operated fitted with glass electrodes.

A-8.3 Reagents

A-8.3.1 *Sodium Chloride Solution* — *M*/10.

A-8.4 Procedure — Shake 10 g of pelt cut to pieces and 100 ml of sodium chloride solution for 2 hours. Decant the extract and determine the *p*H to the nearest 0·05.

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*Methods of chemical testing of leather (*first revision*).

NOTE— The pH value of the aqueous extract of pickled pelt increases with time of storage and the increase is accelerated at elevated storage temperatures or if mould becomes established.

A-9. DETERMINATION OF SHRINKAGE TEMPERATURE

A-9.1 Outline of the Method — Shrinkage temperature is determined in accordance with the method prescribed in LP: 10 of IS : 5914-1970* after neutralizing the acid in sodium acetate solution.

A-9.2 Apparatus

A-9.2.1 *Shrinkage Tester*

A-9.3 Reagents

A-9.3.1 *Bromophenol Blue Indicator Solution — See* IS : 2263-1979†.

A-9.3.2 *Sodium Acetate Solution — M/5.*

A-9.4 Procedure — Soak six test pieces, 50 × 50 mm, for 24 hours in 200 ml of sodium acetate solution. Cut a test piece and spot the cut section with bromophenol blue indicator solution. The cut section should not develop yellow. If the cut section shows yellow, soak the test pieces further in sodium acetate solution and until the acidity is neutralized. Determine the shrinkage temperature in sodium acetate solution in accordance with LP: 10 of IS : 5914-1970*. Raise the temperature at the rate of 2°C per minute and record the temperature at which shrinkage occurs to the nearest °C.

APPENDIX B

(*Clause* 5.1)

SAMPLING PROCEDURE AND CRITERIA FOR CONFORMITY

B-1. LOT

B-1.1 All the pickled goat skins in a consignment processed from the same type of raw materials shall constitute a lot.

B-1.1.1 For ascertaining the conformity of a lot to the requirements of this specification, samples shall be tested from each lot separately.

B-1.2 The number of pieces to be selected in a sample from a lot shall depend upon the size of the lot and shall be in accordance with Table 2.

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*Methods of physical testing of leather.

†Methods of preparation of indicator solution (*first revision*).

TABLE 2 NUMBER OF PICKLED GOAT SKIN PIECES TO BE SELECTED FROM A LOT AND PERMISSIBLE NUMBER OF DEFECTIVES

(*Clause* B-1.2)

No. of Pieces in the Lot	For Visual Examination		No. of Pieces to be Selected for Testing Fungicidal Efficacy
	No. of Pieces to be Selected in the Sample	Permissible Number of Defectives	
(1)	(2)	(3)	(4)
Up to 25	5	0	2
26 to 50	8	0	3
51 to 100	13	1	3
101 to 300	20	2	5
301 and above	32	3	8

B-1.3 At least 10 percent of the packages shall be opened and an equal number of pickled goat skins shall be selected at random from each of the packages to constitute the sample of size given in col 2 of Table 2.

B-2. POSITION OF SAMPLING

B-2.1 The position for taking out samples for various tests prescribed in this standard shall be in accordance with IS : 5868-1983*.

B-3. CRITERIA FOR CONFORMITY

B-3.1 All the pickled goat skins in the sample selected according to **B-1.2** shall be examined for visual characteristics. A piece which fails to satisfy any of the visual requirements shall be called a defective.

B-3.1.1 A lot shall be considered as having satisfied the visual requirements, if the number of defective pieces found as in **B-3.1** does not exceed the corresponding permissible number of defectives given in col 3 of Table 2.

B-3.2 A sub-sample of pickled goat skin pieces as given in col 4 of Table 2 shall be selected from those examined for visual characteristics (**B-3.1**) and each of the selected pieces shall be tested for mildew resistance. A lot shall be considered to have satisfied the requirement for mildew resistance if all the sample pieces selected for this purpose pass for test.

B-3.3 For moisture content, two independent determinations shall be made. For each of the other characteristics specified in Table 1, one test shall be conducted. The lot shall be deemed to be conforming to the requirements for these characteristics if all the test results satisfy the corresponding requirements given in col 3 of Table 1.

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*Method of sampling for leather (*first revision*).

(*Continued from page* 2)

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Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Definition*
Force	newton	N	1 N = 1 kg,m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s(s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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